LCD / LCM SPECIFICATION

WINSTAR Display Co.,Ltd.

華凌光電股份有限公司

SPECIFICATION

MODULE NO.: WO24064A1

General Specification

Item	Dimension	Unit
Number of dots	240 x 64	—
Module dimension	142.5 x 51.7 x 14.9 (MAX)	mm
View area	130.2 x 37.6	mm
Active area	127.17 x 33.89	mm
Dot size	0.50 x 0.50	mm
Dot pitch	0.53 x 0.53	mm
Duty	1/65	
Backlight Type	LED	
IC	ST7565P	
Interface	6800/8080/4-Line SPI	

Absolute Maximum Ratings

Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	T_{OP}	-20	–	+70	℃
Storage Temperature	T_{ST}	-30	–	+80	℃
Power Supply Voltage	VDD	-0.3	–	3.6	V
Power supply voltage (VDD standard)	V0, VOUT	-0.3	–	14.5	V
Power supply voltage (VDD standard)	V1, V2, V3, V4	-0.3	–	V0+0.3	V

Electrical Characteristics

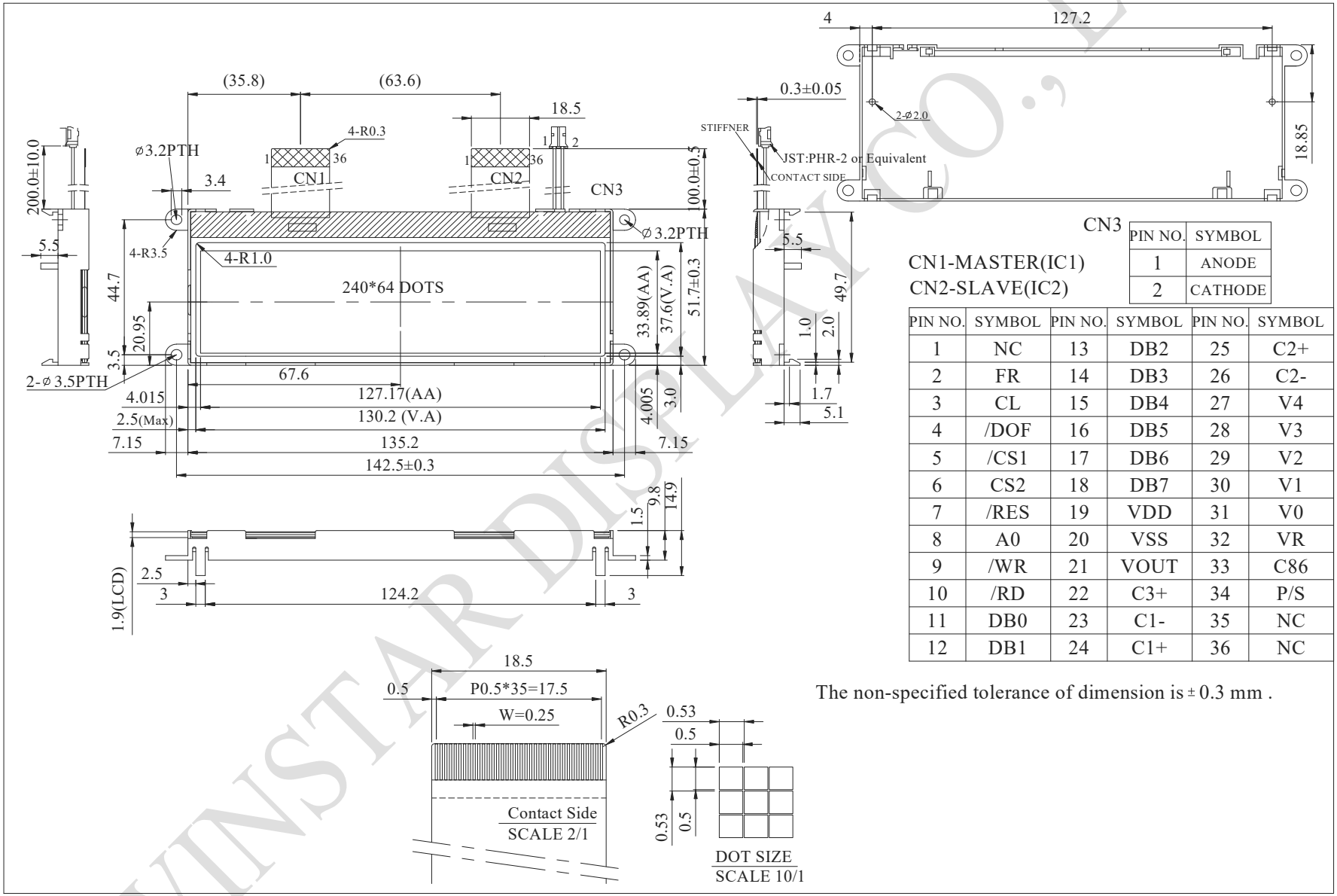
Item	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage For Logic	VDD-VSS	–	3.0	3.3	3.6	V
Supply Voltage For LCM	Vo-V_{SS}	Ta=-20℃	–	–	–	V
		Ta=25℃	10.7	11.0	11.3	V
		Ta=70℃	–	–	–	V
Input High Volt.	VIH	–	0.8 V_{DD}	–	V_{DD}	V
Input Low Volt.	VIL	–	Vss	–	0.2 V_{DD}	V
Output High Volt.	VOH	–	0.8 V_{DD}	–	V_{DD}	V
Output Low Volt.	VOL	–	Vss	–	0.2V_{DD}	V
Supply Current(No include LED Backlight)	IDD	V_{DD}=3.3V	–	1.5	2.5	mA

Interface Pin Function

Pin No.	Symbol	Level	Description
1	NC		No connection
2	FR	O	This is the liquid crystal alternating current signal terminal.
3	CL	I/O	This is the display clock input terminal The following is true depending on the M/S and CLS status.
4	/DOF	O	This is the LCD blanking control terminal.
5	/CS1	I	This is the chip select signal. When /CS1 = "L" and CS2 = "H", then the chip Select becomes active, and data/command I/O is enabled.
6	CS2	I	
7	/RES	I	When /RES is set to "L", the register settings are initialized (cleared). The reset operation is performed by the /RES signal level.
8	A0	I	This is connect to the least significant bit of the normal MPU address bus, and it determines whether the data bits are data or command. A0 = "H": Indicates that D0 to D7 are display data. A0 = "L": Indicates that D0 to D7 are control data.
9	/WR	I	When connected to 8080 series MPU, this pin is treated as the "/WR" signal of the 8080 MPU and is LOW-active. The signals on the data bus are latched at the rising edge of the /WR signal. When connected to 6800 series MPU, this pin is treated as the "R/W" signal of the 6800 MPU and decides the access type : When R/W = "H": Read. When R/W = "L": Write.
10	/RD	I	When connected to 8080 series MPU, this pin is treated as the "/RD" signal of the 8080 MPU and is LOW-active. The data bus is in an output status when this signal is "L". When connected to 6800 series MPU, this pin is treated as the "E" signal of the 6800 MPU and is HIGH-active. This is the enable clock input terminal of the 6800 Series MPU.
11~18	DB0~DB7	I/O	Data bus
19	V_{DD}	P	Power supply
20	V_{SS}	P	Ground
21	Vout	O	DC/DC voltage converter. Connect a capacitor between this terminal and VSS or VDD
22	C3+	O	DC/DC voltage converter
23	C1-		

24	C1+		
25	C2+		
26	C2-		
27	V4	P	This is a multi-level power supply for the liquid crystal drive. The voltage Supply applied is determined by the liquid crystal cell, and is changed through the use of a resistive voltage divided or through changing the impedance using an op. amp. Voltage levels are determined based on Vss, and must maintain the relative magnitudes shown below. V0 ≧V1 ≧V2 ≧V3 ≧V4 ≧Vss
28	V3		
29	V2		
30	V1		
31	V0		
32	VR	I	Output voltage regulator terminal. Provides the voltage between VSS and V0 through a resistive voltage divider. IRS = "L" : the V0 voltage regulator internal resistors are not used. IRS = "H" : the V0 voltage regulator internal resistors are used.
33	C86	I	This is the MPU interface selection pin. C86 = "H" : 6800 Series MPU interface. C86 = "L" : 8080 Series MPU interface.
34	P/S	I	This pin configures the interface to be parallel mode or serial mode. P/S = "H" : Parallel data input/output. P/S = "L" : Serial data input. The following applies depending on the P/S status: P/S Data/Command Data Read/Write Serial Clock "H" A0 D0 to D7 /RD, /WR X "L" A0 SI (D7) Write only SCL (D6) When P/S = "L", D0 to D5 must be fixed to "H". /RD (E) and /WR (R/W) are fixed to either "H" or "L". The serial access mode does NOT support read operation.
35	NC		No connection
36	NC		No connection

Contour Drawing



CN3

PIN NO.	SYMBOL
1	ANODE
2	CATHODE

CN1-MASTER(IC1)
CN2-SLAVE(IC2)

PIN NO.	SYMBOL	PIN NO.	SYMBOL	PIN NO.	SYMBOL
1	NC	13	DB2	25	C2+
2	FR	14	DB3	26	C2-
3	CL	15	DB4	27	V4
4	/DOF	16	DB5	28	V3
5	/CS1	17	DB6	29	V2
6	CS2	18	DB7	30	V1
7	/RES	19	VDD	31	V0
8	A0	20	VSS	32	VR
9	/WR	21	VOUT	33	C86
10	/RD	22	C3+	34	P/S
11	DB0	23	C1-	35	NC
12	DB1	24	C1+	36	NC

The non-specified tolerance of dimension is ± 0.3 mm .